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**(54) GAS TURBINE STATIONARY BLADE
STRUCTURE AND LIFE CONTROLLING
METHOD THEREFOR**

(57) Abstract:

PROBLEM TO BE SOLVED: To suppress maximum crack growth of a gas turbine stationary blade and to attain long lives of parts by preliminarily providing cooling holes on paths of cracks for a portion in which growth of the cracks is estimated and making a structure in which stress strength at tips of the cracks is reduced at a point of time when the cracks reach the cooling holes.

SOLUTION: When thermal fatigue cracks 3 are detected in a gas turbine stationary blade, development of the cracks 3 is suppressed by working holes 4 in the growth directions of the cracks 3 and reducing specific stress field at tips of the cracks 3 when the cracks 3 reach the holes 4. Because the shapes of the holes 4 reduce stress concentration in the growth directions

of the cracks 3, the holes 4 are made elliptical or race track type holes in which the growth directions of the cracks 3 become a minor axis. Because there are many cases where portions generating these thermal fatigue cracks 3 can be estimated from a structural analysis or analysis of trends of past damage data, sometimes these holes 4 are preliminarily worked at a portion where the cracks 3 are estimated to be generated when manufactured.

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